

Contest 8: Lighting

Electric Lighting Quality (50 pts):

A Jury of lighting experts will evaluate the design and implementation of the house's interior and exterior electric lighting systems. The Jury will reward teams for:

- Identifying and responding to the specific client's lighting requirements
- Designing rich and varied lighted spaces that have adequate lighting for tasks and good color rendition
- Selecting attractive luminaires that properly distribute light
- Installing lighting controls that enhance the ease of operation, flexibility, and energy efficiency of the lighting system
- Designing exterior lighting systems that provide safety, security, and aesthetics for residents, guests, and passers-by.

A team's illuminance selections demonstrate its understanding of the particular space and the needs of the clients. The Jurors will rely mostly on their experience to evaluate a team's illuminance selections throughout the house. However, the Organizers will assist the Jurors by making horizontal illuminance measurements at several key locations and providing the results to the Jurors as the Jury enters each house for its tour. These objective measurements will help the Jurors calibrate their subjective evaluations of illuminance at these and other locations throughout the house. The table below summarizes the illuminance measurement locations.

<i>Room Location</i>	<i>Specific Measurement Location</i>	<i>Specific Task</i>	<i>Recommended Horizontal Illuminance* (footcandles)</i>
Kitchen	One measurement at center of sink at counter height	Cleaning and inspection of dishes, utensils, evaluation of color and texture of foods in preparation, reading, and measuring	50
Dining	One measurement at center of table top	Enhance the color and texture of the food while creating a festive mood and providing adequate light levels	5
Bathroom	One measurement at a point 61 inches above finished floor and 16 inches in front of center of mirror	Shaving and applying makeup	30

* The source of these recommendations is the 9th Edition of the IESNA Lighting Handbook, which states, “the recommended illuminances provided in the Design Guide are based on Society’s judgment of best practice for ‘typical’ applications. Every situation is unique so, naturally, typical conditions may not be appropriate for a specific application. As a professional, the lighting designer should have a better understanding of the particular space and the needs of the occupants and clients than what can be presented in a recommended illuminance value for a typical space.” Therefore, teams are encouraged to establish their own appropriate illuminance targets throughout the house. However, if a team deviates by, say, 1/3 more or 1/3 less than an illuminance recommended by a reputable design guide, it should carefully document the justification for its deviation and justify the deviation to the Jury’s satisfaction.

Daylighting Quality (25 pts):

A Jury of lighting experts will evaluate each team’s ability to address the following important factors in its daylighting design and implementation:

- Human factors, including physiology, perception, preferences, and behavior
- Effects of daylight on all materials, including furniture, artwork, and plants
- Controlled admission of direct sunlight
- Controlled admission of diffuse daylight
- Integration of building systems, including the electric lighting, fenestration, interior geometry and finishes, manual and automatic control systems, and active climate control systems.

Evening House Lighting (15 pts):

This Contest Activity encourages teams to save energy by reducing the *total connected power* of the lighting system. (Note: In addition to its assessment of lighting quality, the Lighting Jury will also assess potential energy savings attributable to *lighting controls*. The lighting control evaluation is one of the Electric Lighting Quality Contest Activity criteria.)

The Contest Activity procedure follows:

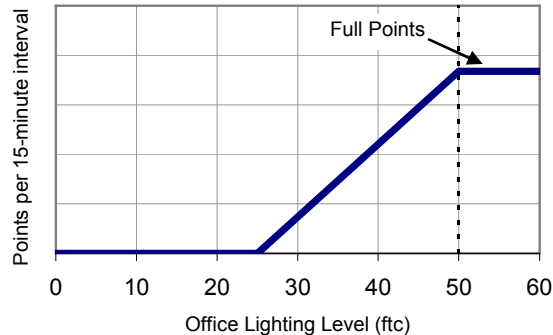
On each evening from Monday through Thursday of Contest Week, with the exception of the evening during which the team hosts a dinner party and the period of time during which the Lighting Jury is in the house, *all* interior and exterior house lights, with the exception of entry door lights on motion sensors, shall be on between 7:30 p.m. and 9:30 p.m. to receive the full 5 points. All dimmers shall be adjusted to their highest positions and all other lighting control equipment shall be disabled or overridden so that the controlled lamps are fully and continuously on during the 2-hour period.

Partial credit will be awarded for partial compliance. However, a team is only eligible for partial credit if it informs its assigned Observer when it is turning on or off selected lamps.

Daytime Workstation Lighting (10 pts):

Before the Contest Week begins, photometers (light level sensors) will be installed on the surface of the workstation desk. Light-emitting devices within 18 in. (45.7 cm) of the sensors are not permitted.

Teams earn the maximum number of points per 15-minute interval by keeping the time-averaged office work surface light level above 50 footcandles (538 lux) between 9 a.m. and 5 p.m. on 4 days of the Contest Week. A reduced point value is added to the team's score for every 15-minute interval the time-averaged office work surface light level is between 25.0 footcandles (269 lux) and 50.0 footcandles (538 lux). Reduced point values are scaled linearly, as shown in the following graph.



Full Points:	Light Level	\geq 50 ftc (538 lux)
Reduced Points:	25 ftc (269 lux) < Light Level	< 50 ftc (538 lux)
No Points:	Light Level	\leq 25 ftc (269 lux)

Contest Activity	Points Available
Electric Lighting Quality	50
Daylighting Quality	25
Evening House Lighting	15
Daytime Workstation Lighting	10
TOTAL	100